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National Association of Regulatory Utility Commissioners

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552207

October 10, 2001

Ms. Carol Hanlon
U.S. Department of Energy
Yucca Mountain Site Characterization Office
M/S #025
P.O. Box 30307
North Las Vegas, NV 89036-0307

RECEIVED
OCT 16 2001

Re: Possible Site Recommendation for Yucca Mountain

Dear Ms. Hanlon:

The National Association of Regulatory Commissioners (NARUC) hereby submits the attached comments on the Yucca Mountain Preliminary Site Suitability Evaluation for consideration by the Secretary of Energy on the suitability of Yucca Mountain as a geologic repository under the Nuclear Waste Policy Act of 1982, as amended.

We urge the Secretary of Energy to make a recommendation of suitability to the President as soon as all conditions required under NWPA have been met. The PSSE and related documents provide ample scientific basis for such a recommendation.

Thank you for this opportunity to express our views.

Sincerely,

Charles D. Gray
Executive Director

Attachment

Cc: Honorable Spencer Abraham
Mr. Lake H. Barrett, OCRWM

BEFORE THE
UNITED STATES OF AMERICA
Department of Energy
Office of Civilian Radioactive Waste Management

Public Notice of Availability of Report and Initiation of Public Comment Period	
Possible Site Recommendation for Yucca Mountain	**(May 7, 2001)**

COMMENTS OF THE
NATIONAL ASSOCIATION OF REGULATORY UTILITY COMMISSIONERS

The National Association of Regulatory Utility Commissioners ("NARUC") respectfully submits these comments in response to the "Public Notice of Availability of Report and Initiation of Public Comment Period" ("Notice") published by the Department of Energy's ("DOE") at 66 Federal Register 23013-23016 (May 7, 2001) and supplemented at 66 Federal Register 438850-43851 (August 21, 2001). NARUC welcomes the opportunity to comment on the Yucca Mountain Science and Engineering Report and the Yucca Mountain Preliminary Site Suitability Evaluation; Site Recommendation Consideration.

INTERESTS OF OUR ORGANIZATION

NARUC is a quasi-governmental nonprofit organization founded in 1889. Within its membership are the governmental bodies of the fifty States engaged in the economic and safety regulation of carriers and utilities. The mission of NARUC is to serve the public interest by seeking to improve the quality and effectiveness of public regulation in America. More specifically, NARUC is comprised of those State officials charged with the duty of regulating the retail rates and services of electric, gas, water and telephone utilities operating within their respective jurisdictions. We have the obligation under State law to assure the establishment and maintenance of such energy utility services as may be required by the public convenience and necessity, and to ensure that such services are provided at rates and conditions which are just, reasonable and nondiscriminatory for all consumers.

INTRODUCTION

The evidence available through the *Yucca Mountain Science and Engineering Report* (S&ER), DOE/RW-0539, the *Yucca Mountain Preliminary Site Suitability Evaluation* (PSSE), DOE/RW-0540 and the supporting documents provides the legal and technical basis to support a recommendation by the Secretary of Energy to the President that Yucca Mountain is suitable for development as a geologic repository for safe, permanent disposal of the Nation's high-level radioactive waste as called for in the Nuclear Waste Policy Act of 1982 and Amendments. The Secretary should advise the Governor and Legislature of Nevada of the recommendation under the provisions of Section 114 of NWPA. After the applicable procedures of further approvals are followed, the site should be approved for the next and more rigorous evaluation of suitability: the submission and review of a license application to begin construction of a repository. The Nuclear Regulatory Commission (NRC) will make its independent determination, per the NWPA and the proposed NRC Yucca Mountain licensing guidelines (10 CFR Part 63).

Solving the nuclear waste disposal problem has been avoided for too long. President Jimmy Carter said over twenty years ago:

> **" Resolving civilian waste management problems shall not be deferred to future generations."**

Even after years of study in the site characterization of Yucca Mountain for suitability as a geologic repository, some people continue to ask, "why not look at other alternatives?" Such questions suggest consideration of alternatives was never done. Various approaches and alternatives have been considered over decades since the beginning of the Atomic Age. It was done before President Carter, with his nuclear engineering background, adopted "an interim planning strategy focused on the use of mined geologic repositories" in his message to Congress in February 1980. Congress considered other means of radioactive waste management when it chose geologic disposal as the safe and environmentally acceptable method of disposal (Sec. 111, NWPA) in 1982. The time for planning and studying is nearly over: it is time to move forward to site approval so that the matter of licensing a repository can be placed before the Nuclear Regulatory Commission, the agency of government that bears the responsibility to "ensure adequate protection of the public health and safety, the common defense and security, and the environment in the use of nuclear materials in the United States."

SUMMARY OF NARUC COMMENTS

The following NARUC comments are included in the sections of text that follow and are listed here for ease of tabulation and analysis by DOE:

1. The evidence available through the *Yucca Mountain Science and Engineering Report* (S&ER), DOE/RW-0539, the *Yucca Mountain Preliminary Site Suitability*

Evaluation (PSSE), DOE/RW-0540 and the supporting documents provides the legal and technical basis to support a recommendation by the Secretary of Energy to the President that Yucca Mountain is suitable for development as a geologic repository for safe, permanent disposal of the Nation's high-level radioactive waste as called for in the Nuclear Waste Policy Act of 1982 and Amendments. (page 2)

2. The regulatory approach (10 CFR Part 963) is appropriate. We support DOE's approach of applying the latest NRC, EPA and DOE regulations that apply to this site suitability determination. (page 6)

3. We find the contents and organization of the Science & Engineering Report and the Preliminary Site Suitability Evaluation to be comprehensive and well presented. (page 6)

4. We support the concept of design flexibility, as outlined in Sec. 2.1.3 of S&ER, as appropriate to the circumstance of being responsive to ongoing scientific data gathering and analysis as well as the likely opportunity for DOE and the NRC license review teams to continue to evolve the approach as they work cooperatively on something that has never been done before and as technology continues to provide improved components for the repository. (page 7)

5. Although there is little discussion or evaluation of spent fuel transportation in these two reports (but well addressed in the Draft EIS) the same approach should be applied to transportation so that the public can have confidence that shipments to a Yucca Mountain repository can be planned and executed with the same excellent safety record that has been compiled by the nuclear industry to date. (page 7)

6. Table 4-2 PSSE displays the summary of preliminary evaluation peak mean annual doses for 10,000 years for the three standards for both the TSPA-SR and Supplemental TSPA. The dose estimates are all well below the limits of the standards and support a finding of suitability. (page 9)

7. One of the radiation standards continues to strike us as unrealistic. When 40 CFR Part 197 was circulated as a proposed rule for public comment, we made specific comment on the inadvertent human intrusion scenario. We consider it a highly improbable scenario. (page 9)

Comments on matters not directly related to the Preliminary Site Suitability Evaluation but which have a bearing on the need to develop a repository:

8. The Nuclear Waste Fund needs reform or there may not be a repository even if Yucca Mountain is found suitable. (page 11)

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9. If the suitability decision is delayed, there is a concomitant delay in waste acceptance and all the intermediate steps in between. That carries with it certain additional costs that will eventually fall to the federal government. (page 12)

10. In our opinion, a decision that does not result in spent fuel acceptance by the federal government is an abrogation of the central tenet of the Nuclear Waste Policy Act. (page 13)

11. Reprocessing can be pursued as technical, economic, national security and environmental conditions permit, but it is not a substitute for permanent isolation of radioactive waste, nor is it precluded in the flexible repository design which permits retrieval of spent fuel at any point prior to sealing of the repository when future decision makers determine. (page 15)

12. NARUC believes strongly that there is a great need for public education from a credible organization on the facts of risk of transportation of various forms of radioactive waste. (page 16)

13. Further, we strongly recommend that the Department of Energy engage with other federal, State, tribal and local government agencies on transportation planning. (page 16)

Additional comments responding to the notice in the Federal Register on August 30, 2001 (Volume 66, Number 169, pages 45845-45846) referred to in a letter sent to stakeholders are placed at the end of this document (pages 17-19.)

DISCUSSION

I. Comments on Science and Engineering Report and Preliminary Site Suitability Evaluation

The S&ER, the PSSE and the supporting references provide a comprehensive compilation and assessment of nearly twenty years of site characterization work that has been conducted at Yucca Mountain. Indeed, the site is quite likely "the most widely studied piece of real estate in the world." The work was conducted pursuant to direction provided by legal mandates of the Nuclear Waste Policy Act of 1982 and Amendments of 1987, various proposed regulations, Department of Energy (DOE) program plans, scientific principles, suggestions from several oversight bodies and inputs from both scientific specialists and various stakeholders. For an agency whose organizational predecessors operated largely under a veil of secrecy, DOE has managed this program in an open and public process. That is to be commended.

Much of the information about the site characterization, such as that contained in these two documents, is presented for use by specialists in the various technical disciplines.

Although well organized and enhanced by tables and figures, the documents are challenging reading for the general reader. We suspect that few but the specialists and those directly involved in the scientific work and preparation of the documents have read, much less studied, the bulk of the reports beyond the executive summaries. Even some of the terminology and charting techniques are difficult for the non-technical reader to fully understand. For example, the charts of dose over time use a logarithmic scale on both axes, which is probably conventional practice in such data displays, but the layperson may overlook that important difference from linear scales that are more familiar. Both documents could have used a notation in the introduction or even on each chart that used non-linear scaling.

In recent years, a growing body of evidence in reports produced from the Office of Civilian Radioactive Waste Management (OCRWM) addresses the Yucca Mountain repository project:

- In 1998, the Secretary of Energy submitted the *Viability Assessment* (DOE/RW-0508) for Congress and the President that concluded that there were "no showstoppers" identified to date and that work should proceed leading to a decision in 2001 on whether to recommend the site for development as a geologic repository.

- In 1999, DOE issued the *Draft Environmental Impact Statement (EIS) for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada* (DOE/EIS-0250D). It examined the environmental impacts of the "proposed action" of building and operating a repository at Yucca Mountain as well as two "No-Action" scenarios and "did not identify any potential environmental impacts that would be a basis for not proceeding with the Proposed Action."

- In May 2001, DOE issued a *Supplement to the Draft EIS* to address some changes in repository design that had evolved since the earlier document had been prepared. The document showed that the "flexible design" had little significant change in environmental impact from the Draft EIS impact analyses.

- Although there were extended delays in reaching consensus on the appropriate radiation standards that would serve as the principle safety criteria for a geologic repository, the U.S. Environmental Protection Agency issued the Public Health and Environmental Radiation Protection Standards for Yucca Mountain (40 CFR Part 197) in June 2001. The Final Rule set individual protection, groundwater and human intrusion standards. The standards were seen by many outside the radiation health field as more strict than some levels and methodologies that some within the radiation heath profession considered necessary for protection of health and safety, but at least the impasse was ended and the standard that the Yucca Mountain study process would have to meet was set.

The above developments formed the backdrop for the issuance first of the S&ER in May and the PSSE in August. The release of the PSSE had to be delayed until the radiation standard was issued as a Final Rule. With the release of these documents, it appears that DOE is moving into position to prepare a recommendation for the Secretary of Energy on site suitability to be sent to the President, perhaps by the end of this year. There are further procedural steps to be taken before that takes place, but our understanding is that the information and analysis of repository performance, contained in the S&ER and the PSSE, will continue to evolve to either improve performance or reduce uncertainty. The public has been provided all relevant material related to a possible site recommendation and has been given the opportunity to comment either in the public hearings or in writing.

NARUC has provided written comments on the four documents listed above. We appreciate the opportunity to provide these written comments.

The Regulatory Approach is Appropriate

The State of Nevada wrote to DOE on August 24, 2001 "insisting that the Department immediately suspend the current notice in the Federal Register, conduct an evaluation of the Yucca Mountain site under the 10 CFR 960 guidelines and publish the results of that evaluation in the Federal Register for public review and comment." 10 CFR Part 960 was a general guideline for a geologic repository issued in 1984 subsequent to which Congress, through the 1987 Amendments to the Nuclear Waste Policy Act, designated Yucca Mountain as the sole site to be characterized. Among other provisions the 10 CFR Part 963 siting guidelines will have is the EPA approved radiation standards, which were not included in 10 CFR Part 960. We support DOE's approach of applying the latest NRC, EPA and DOE regulations that apply to this site suitability determination.

NARUC filed comments on 10 CFR Part 963 during the public comment period in 1999.

The State of Nevada also filed suit with EPA in June 2001 over the radiation standards, 10 CFR Part 197, contending that the regulatory compliance period of 10,000 years is insufficient since the peak dose in the repository will not occur for hundreds of thousands of years. The definition of the compliance period was thoroughly addressed when the proposed rule was open to public comment during 1999. We know of no other federal regulation, aside from the similar radiation standards for the WIPP facility, that calls for compliance for 10,000 years. Since DOE will have difficulty demonstrating prospective compliance for 10,000 years—since the only basis will be through computer modeling—to suggest that the period should be any longer seems to serve little purpose. It is noted, nonetheless, that the PSSE does show dose projections for up to one million years (Figure 3-3, PSSE.)

Content and Analysis of Latest Reports

We find the contents and organization of the Science & Engineering Report and the Preliminary Site Suitability Evaluation to be comprehensive and well presented. The

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presentation and discussion may be difficult for some to fully comprehend, but we trust that those who are more familiar with the subject matter will be able to find what they need to examine with a critical eye what the reports tell them and us about the site and its suitability for the repository mission. We have confidence in the professional qualifications and skills of the site characterization team of the M&O contractor, the support contractors, the participation of just about all the National Laboratories and DOE's program managers to develop a comprehensive site characterization plan, conduct countless studies and experiments, prepare and circulate analysis on an inter-disciplinary basis and document results. We attended numerous technical presentations before the Nuclear Waste Technical Review Board and have always been impressed by the command of subject matter presented to the Board by the scientific and program team members and the openness to inquiry and responsiveness to suggestions. We expect that even more thorough and rigorous examination of repository design will take place when DOE has approval to advance to the license application phase.

We support the concept of design flexibility, as outlined in Sec. 2.1.3 of S&ER, as appropriate to the circumstance of being responsive to ongoing scientific data gathering and analysis as well as the likely opportunity for DOE and the NRC license review teams to continue to evolve the approach as they work cooperatively on something that has never been done before and as technology continues to provide improved components for the repository. We realize that DOE has asked the National Research Council to examine potential benefits and impacts of "stepwise" development of the repository. Provided the process does not get bogged down in endless studies, we support the need for flexibility in seeking the best repository that can be designed, built and put into productive use.

Pre-Closure Suitability

The PSSE is divided into two primary suitability evaluations. The first, in Section 2 PSSE, is the period of regulatory compliance from construction, transportation, materials handling, emplacement and performance monitoring until closure, using criteria from proposed 10 CFR 963.14. A comprehensive list of hazardous events was developed and those above a certain event frequency are examined further and dose estimates are calculated. The dose results are displayed in Table 1 of PSSE and all are within limits. The conclusion, in Section 2.4.1.2, is that "the repository can operate in the range of Preclosure periods within proposed public and repository does limits and would be in compliance with the proposed standards (a) for protection against radiation exposures and release of radioactive material." Other criteria are evaluated for regulatory compliance for (b) ability to implement control and emergency systems, (c) ability to maintain safety systems and components and (d) ability to preserve the option to retrieve wastes during the preclosure period.

It was also noted in the introduction to section 2 that the repository will be built and operated using known technology and operating systems and that the repository design and operation will draw upon extensive experience of the nuclear industry. We find this to be a basis for confidence that the repository can be developed, materials shipped to it and be emplaced in the repository with great care, attention to detail and quality

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assurance and regulatory vigilance. Although there is little discussion or evaluation of spent fuel transportation in these two reports (but well addressed in the Draft EIS), the same approach should be applied to transportation so that the public can have confidence that shipments to a Yucca Mountain repository can be planned and executed with the same excellent safety record that has been compiled by the nuclear industry to date.

Post-Closure Suitability Evaluation

Section 3 of the PSSE presents the consideration of performance of the repository after closure for what is likely an extraordinarily long regulatory performance period of 10,000 years. The NRC proposed rule 10 CFR Part 63 states that " the inherent radiological hazard of spent nuclear fuel decreases rapidly and significantly during the initial 10,000 years due to radioactive decay...with relative hazard diminished by 90 percent at 100 years and ...99.9 percent by 10,000 years." Since there is no experience base for a geologic repository, the evaluation is based on the Total Systems Performance Assessment (TSPA) methodology that DOE has developed under the framework of the proposed NRC licensing guidelines.

The decision to close the repository is left to "future decision-makers" under the design flexibility approach adopted by DOE. This allows the flexibility of retrievability for a number of reasons such as performance monitoring outside design parameters or, possibly a future determination that the spent fuel may be reprocessed economically or with technology that presently does not exist. The range of closure periods examined in the reports is between 50 and 300 years. The longer preclosure periods would have higher costs, which would be one of the decision factors in determining a closure date. The performance monitoring period that is contemplated will provide future decision-makers with better information upon which to base the closure decision than is available now.

Section 3 PSSE describes the TSPA methodology used to assess the ability of the natural and manmade barriers to work together as multiple and diverse barriers to isolate, delay transport and reduce concentrations of radionuclides so that radiological exposures will meet the standards established by EPA in 40 CFR Part 197 for 10,000 years. The limits are examined for three standards:

- Individual protection
- Groundwater protection
- Human intrusion scenario

The evaluation methodology is explained in Section 3.1 PSSE and is not repeated here. We would expect that EPA and the NRC will be better able to conclude that the approach is correct. It appears appropriate to us. We acknowledge of the evaluation of "conservatisms" in the TSPA-SR model as compared to the FY 01 Supplemental Science and Performance Analyses, which examined a range of repository operating temperatures and quantified uncertainties to a greater extent. There are nuances in such evaluations that may escape the full understanding of the layperson but should be useful to the performance assessment team and the various technical reviewers.

Post-Closure Evaluation Results

Table 4-2 PSSE displays the summary of preliminary evaluation peak mean annual doses for 10,000 years for the three standards for both the TSPA-SR and Supplemental TSPA. The dose estimates are all well below the limits of the standards and support a finding of suitability.

Inadvertent Human Intrusion Scenario

One of the radiation standards continues to strike us as unrealistic. When 40 CFR Part 197 was circulated as a proposed rule for public comment, we made specific comment on the inadvertent human intrusion scenario. We consider it a highly improbable scenario. It suggests that a future well-driller will drill a borehole from directly above the repository and penetrate a decomposed waste package in one of the drifts, without realizing it, continue to the water table below and withdraw the drill to leave a borehole down which rainwater travels to become contaminated with radionuclides and eventually mix with the groundwater and be drawn to the surface by the hypothetical subsistence farmer at a specified location in Amargosa Valley. Our first question was, "why would someone drill for water from atop or on the slopes of Yucca Mountain, when the water table is more accessible from the adjacent valleys (where there is no waste storage?)" This scenario is of perhaps academic interest but it has no practical application.

We share the conclusion presented in Section 3.3.10 PSSE from preliminary analysis done in the FY 01 Supplemental Science and Performance Analyses that "the human intrusion event, if it were to occur at all, would not happen in the time frame of regulatory compliance" because "the ductility of metals makes the drip shield and the waste package nearly impenetrable by current technology and practices used in typical water well drilling." The well-drillers will recognize that they have struck metal since the PSSE estimates the corrosion failure of the waste packages will not occur until perhaps 30,000 years.

II. Comments Related to the Need for Safe, Permanent Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste

The foregoing comments pertained to the Science and Engineering Report and the Preliminary Site Suitability Evaluation. The balance of our comments have to do with other factors not necessarily covered in those reports, but more related to the forthcoming decision to recommend Yucca Mountain as a suitable geologic repository and what the consequences might be if the site is not suitable or the decision to proceed cannot be made or is frustrated in implementation.

Basics of the Nuclear Waste Policy Act Revisited

Let us go back to the basic policy of the NWPA. After years of avoiding action on finding a solution to the problem of safe, permanent disposal of both government and commercial high-level nuclear waste, Congress settled on these basic tenets in 1982:

- The Federal Government is responsible for safe disposal of all high-level radioactive waste in a geologic repository.

- Owners of spent nuclear fuel used at commercial nuclear power plants would pay for the portion of the repository expenses related to that waste form.

The owners of the commercial spent nuclear fuel are the nuclear utilities that operate nuclear power plants. State utility regulators, allowed the utilities to pass along the fee that was developed under the NWPA to their ratepayers who were the beneficiaries of the nuclear-generated electricity.

The NWPA was enacted in 1982 and the fee payment agreements were put into effect within six months through a Standard Contract all utilities that held a license to operate a nuclear power plant were required to enter into with DOE—or lose their operating license. In turn, State utility regulatory commissions approved pass-through of the one mill per kilowatt-hour fee to consumers.

The Nuclear Waste Fund

The fee payment agreement covered two periods: lump-sum payment for spent fuel generated prior to the effective date of the payment agreement and the one mill payments for generation henceforth. Payments to date to the Nuclear Waste Fund, including interest earned, total over $ 16 billion.

The NWPA also had a timetable for the government to fulfill its part of the statutory and contractual requirement. DOE was to begin accepting spent fuel by January 31, 1998 in accordance with an acceptance schedule written into the Standard Contract with each license holder.

When it became apparent that DOE was not going to meet the 1998 schedule, utilities and State regulators urged DOE to establish a central interim storage facility or otherwise make accommodations at a suitable DOE facility to store spent fuel pending the availability of a permanent repository. DOE refused to consider the central interim storage alternative, leaving the utilities the problem of storing the accumulating spent fuel that was starting to approach the point of exceeding the site storage capacity limits. Even though they each had a contract they were compelled to sign in 1983 that said the other party to the contract (DOE) would accept that fuel at a certain date, the utilities were left with the choice of making investments in additional site storage or limiting the plant's ability to continue to operate. There was really no choice for those plants that were going to continue to operate; their owners made or are planning to make those investments.

Their customers are paying those extra costs, even though they are already paying for waste removal and permanent disposal through the fee payments.

Litigation Pending

At least twelve utilities have sued DOE for failure to honor its contractual agreement to begin accepting spent fuel by January 1998. The decisions reached by the Federal Court of Claims that the government has committed a partial breach of contract and is liable for damages were upheld upon appeal by the United States Court of Appeals for the Federal Circuit. *See, Northern States Power Co., et al. v. U.S.*, 224 F.3d 1361 (Fed. Cir. 2000); *see also Maine Yankee Atomic Power Co., et al. v. U.S.*, 225 F.3d 1336 (Fed. Cir. 2000). The determination of damages is pending in the several cases. The liability will continue until the spent fuel is accepted by the government, which is not likely to be any sooner than 2010, if the repository is licensed to accept waste by then. Neither the amount of damages nor the source of funds has been established, but NARUC has been adamant that the Nuclear Waste Fund should not be used for that purpose.

The Nuclear Waste Fund Needs Reform or There May Not be a Repository Even if Yucca Mountain is Found Suitable

The S&ER and PSSE address suitability of Yucca Mountain and do not address cost or funding needed to enable meeting expected milestones. Those matters were covered, however, in other documents released by DOE in May 2001 when the S&ER was released. They are the *Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program* (TSLCC) and the *Nuclear Waste Fund Fee Adequacy: An Assessment, May 2001*. While others may be focusing on site suitability, NARUC is also focusing on the financial aspects of the repository because, except for the Defense portion of program costs for the weapons and other DOE high-level waste, the ratepayers who we represent are paying and will pay for the rest of the program costs, unless the law is changed.

Our concerns with the Nuclear Waste Fund (NWF) are several:

a. The source of payments for damages previously described has not been determined, but if it is the NWF then, depending on amount of damages, the fee may have to be increased substantially or the program schedule is further delayed.

b. Congress only appropriates a fraction of the revenue collected by the NWF, because of discretionary spending caps that did not exist when the NWF payment mechanism was designed.

c. The Bush Administration apparently believes that the present balance of $10 billion in the NWF, as well as the projected difference in revenue and "traditional" annual appropriations, is part of the federal budget surplus.

d. The Fee Adequacy Assessment concludes that the program costs identified in the TSLCC can be readily accommodated with the present one mill fee and projected fee revenues, without realistically addressing items a through c.

e. Congress has considered legislation to correct the NWF rules such that the current "balance" and all future fees can be available for their intended purpose, but that was rejected for various reasons, including maintaining the contradictory positions that the balance in the NWF is part of the surplus while also available to support a program that could lead to waste acceptance at a repository by 2010. Both cannot be true without either a drastic program cost reduction or an order of magnitude fee increase.

There may be time to address the NWF funding problem once the repository siting question is decided, but we urge a concurrent and realistic assessment as to whether there is a secure financial plan to enable repository development in a timely manner. Currently, the matter of sufficient appropriations in the FY 2002 budget is unsettled, despite the need for near term actions to continue the civilian radioactive waste management program and specifically to prepare an NRC license application for repository construction.

On September 5, 2001 the Secretary of Energy submitted a report to Congress, *Alternative Means of Financing and Managing the Civilian Radioactive Waste Management Program*, (DOE/RW-0546.) That report, prepared at direction of the House Appropriations Subcommittee on Energy and Water Development describes the Nuclear Waste Fund problem with this statement, "Absent a change in the funding mechanism, the contractual user fee revenues collected in the NWF are not available to meet their intended purposes." The report provides several alternatives for correcting the funding problem, but even the simplest of them involve gaining support of federal fiscal policy makers in the Administration and Congress. We urge immediate attention to these and other issues raised in the report.

Consequences of No Action

1. Delay in Decision

If the suitability decision is delayed, there is a concomitant delay in waste acceptance and all the intermediate steps in between. That carries with it certain additional costs that will eventually fall to the federal government. The waste acceptance delay-related damages will continue to grow. More utilities will need to make investments in additional reactor-site storage, provided there is suitable space to accommodate added dry storage. Some States and local jurisdictions are quite concerned that lack of progress on a permanent solution may result in reactor site storage becoming the *de facto* permanent solution. They could take legislative action, as Minnesota has, to prevent further site storage expansion. Plant licensing could be jeopardized, as more plants reach their on-site storage limits, which could result in premature reactor shutdown and loss of electric generation

for those States and regions. This would aggravate the national electricity supply problem and lead to greater emissions from substitute fossil plants.

Absent a clear path forward to solving the spent fuel disposal problem, it is difficult to envision utilities making decisions to invest capital in building new nuclear generating plants, resulting on greater reliance on fossil fuels with greenhouse gas emissions and/or import dependency ramifications, well addressed in the President's National Energy Policy.

There is an especially acute need to remove spent fuel from those 14 locations where the reactors have been shut down. Since those plants are no longer producing, there is no revenue to the Nuclear Waste Fund and failure to remove the spent fuel prevents reclamation and reuse of the site for other community needs, while remaining site storage could pose added security problems.

2. Rejection of Yucca Mountain

Congress chose through the 1987 Amendments to the NWPA to eliminate other repository sites from further consideration. Therefore, there is no back-up site. Congress directed through Sec. 113 (c) (3) of NWPA that if the Secretary determines that the Yucca Mountain site is not suitable, he/she shall, inter alia, report to Congress no later than six months after the determination and make "recommendations for further action to assure the safe, *permanent disposal* of spent nuclear fuel and other high-level radioactive waste, including the need for legislative authority." (emphasis added.)

Our interpretation of that provision is that Congress would still expect that permanent disposal is the required path forward. If the best site chosen after a multi-site screening process and then examined in exhaustive detailed test and analysis is found unsuitable and there is no designated "runner-up," then the government is "back to Square One." The Nation would then face another politically contentious site screening and selection process as well as years of site characterization comparable to what took $7 billion and 18 years to perform at Yucca Mountain. President Carter's admonishment for "this generation" to solve the nuclear waste problem would certainly be eclipsed.

In our opinion, a decision that does not result in spent fuel acceptance by the federal government is an abrogation of the central tenet of the Nuclear Waste Policy Act. It would be understandable that utilities further litigate for not just their damages due to failure to honor the standard contract but for full refund of all past payments to the Nuclear Waste Fund. States would likely join in such efforts on behalf of ratepayers.

Failure to have a certain path forward on permanent disposal would come to mean that the Nation will have 77 permanent "disposal" sites in locations never selected for that purpose. The consequences of "No Action" were described (and we feel underestimated) in the Yucca Mountain DEIS. Those consequences would be:

A. Spent fuel well-managed to existing NRC site storage requirements for 10,000 years:

   Enormous financial costs - $ 5 trillion in today's dollars

B. Spent fuel managed to NRC requirements for 100 years, degradation and neglect for the remaining 9,900 years:

   3,300 latent cancer fatalities and inestimable environmental damage to numerous bodies of water.

Clearly, no responsible government would allow either of those circumstances to occur.

What About Reprocessing?

The NWPA and the Sec.113 (c) (3) cited above, set the national policy of permanent disposal. Reprocessing at the time NWPA was enacted had been eliminated as a policy choice by President Ford and later affirmed by President Carter. That was a policy set primarily over concern for proliferation of weapons-grade fissionable reprocessing byproducts that could find their way to other countries. Further, reprocessing had been planned during the 1960's and environmental and economic factors led to abandonment of that plan. Indeed, the residual high-level radioactive waste at the West Valley reprocessing facility is part of the DOE-managed material that is scheduled to be sent to the permanent repository for disposal. Lesson: reprocessing does not eliminate the need for a permanent disposal plan, it merely alters the radiological properties of the waste as well as reducing its volume.

Reprocessing could be considered again as several research studies suggest. DOE conducted a study of accelerator transmutation of nuclear waste a reported the results to Congress in 1999 in *"A Roadmap for Developing Accelerator Transmutation of Waste (ATW) Technology."* The report made no recommendation but did have these features:

a. It would take 117 years to reprocess the existing and expected spent fuel.

b. It would require 8 accelerator sites to transmute the spent fuel.

c. The cost to transmute would be $280 billion although there could be offsets through electricity sales to the grid.

d. There would be considerable waste volume reduction, but a repository would still be required to isolate the waste products for hundreds of years.

The DOE has also done some research on pyroprocessing of nuclear waste, which shows potential to separate plutonium and reduce the present volume of commercial spent fuel by 96 percent and require isolation for hundreds instead of thousands of years.

Whether transmutation, pyroprocessing or some other transforming process can be found to be technically, economically and environmentally feasible remains to be determined, but none of these potential solutions exists today. As we understand them, they would still require some form of repository. It is our further understanding that neither these or any other means of reprocessing are precluded by the proposed "flexible design" for Yucca Mountain during the Preclosure period, during which the plan will be to maintain the ability to retrieve "any or all" of the waste packages for any reason for the entire Preclosure period.

So, reprocessing can be pursued as technical, economic, national security and environmental conditions permit, but it is not a substitute for permanent isolation of radioactive waste, nor is it precluded in the flexible repository design which permits retrieval of spent fuel at any point prior to sealing of the repository when future decision makers determine.

Transportation of Nuclear Waste

Transportation of nuclear waste is not a matter analyzed in either the S&ER or the PSSE, but is clearly a matter of public concern and without which a geologic repository will not be able to fulfill its purpose. There needs to be as much attention to safe transportation from the 77 present locations, where nuclear waste is temporarily stored, to the repository as there is in the development and operation of the repository. We feel these companion questions must be addressed concurrent with the site suitability of Yucca Mountain.

Although the Yucca Mountain Draft Environmental Impact Statement allocates the largest chapter to transportation of nuclear waste, there remains concerns by the public over just how DOE will plan and safely transport spent fuel and the other waste that would be sent to the repository in the future. There are several contrasts that are noteworthy:

- The Department of Energy has not been able to supply enough information about transportation to satisfy some people, especially in Nevada where 100 percent of the material would need to travel and where there are transportation infrastructure limits.

- The State of Nevada, on the other hand, has prepared its own forecast of how waste might be shipped not just within the State but nationwide.

DOE and the State do not appear to be conducting the kind of cooperative planning on transportation that would be needed if the material is to be shipped to a repository at Yucca Mountain beginning in 2010. DOE has concentrated its resources on site suitability, for without a site the questions of transportation are moot. DOE's introduction to the DEIS assumes that there will be up to nine years between the site decision and the need to ship waste and that should be sufficient time to plan, coordinate, determine environmental impacts and even improve some transportation infrastructure.

The State of Nevada is not evaluating specific modes and transportation routes because it opposes development of the repository within the State. State leaders have expressed the view that if transportation planning were to be done now, that would be misinterpreted as a concession that the State would voluntarily accept the repository, when the State evidently will not, as shown by legislative and executive actions and frequently stated positions.

The other contrast is:

- Transportation of spent fuel and other high-level radioactive waste has an excellent safety record, with no radiation release in over 3,000 shipments over 35 years. With proper planning, regulatory enforcement and operations, future shipments can be made as safely or more so as in the past.

- The general public does not know of that record and has many fears of nuclear safety that are often out of proportion to risks involved.

Despite the availability of extensive data and risk analyses on nuclear waste transportation prepared by the federal government and non-governmental sources, the public seems confused about the transportation of radioactive material to Yucca Mountain, if a repository is built there. They may not fully understand the nature of radiation or the conditions of shielding, time and distance that make the shipment of materials in question less of a health risk than they are prepared to believe.

NARUC believes strongly that there is a great need for public education from a credible organization on the facts of transportation risks of various forms of radioactive waste. The NRC has produced some excellent reports on the subject, such as *Reexamination of Spent Fuel Risk Estimates* (NUREG/CR-6672.) There is a clear need to publish a companion document that draws on that analytical material and put it in a more reader-friendly form that would be valuable in providing facts to the general public.

Further, we strongly recommend that the Department of Energy engage with other federal, State, tribal and local government agencies on transportation planning. It would be extremely helpful to know, for example, whether DOE anticipates a mostly rail or mostly truck shipment mode. Many States, besides Nevada, want to know what modes and routes are likely to be used so they can do their own planning.

III. Responses to Suggested Topics for Public Comment

A notice in the Federal Register on August 30, 2001 (Volume 66, Number 169, pages 45845-45846) referred to a letter sent to stakeholders interested in the Yucca Mountain whose interest in commenting on the PSSE was anticipated by DOE. We received such a letter and offer the following in response to each question. In many cases, we have already covered some of the responses in what has already been included in these comments.

A. Please provide your views concerning whether the Yucca Mountain Preliminary Site Suitability Evaluation (PSSE) and other scientific documents produced by the Department provide an adequate basis for finding that the Yucca Mountain site is suitable for development of a repository. If you believe that certain aspects of the PSSE are inadequate, please detail the basis for this belief and indicate how the documentation might be made adequate with respect to these aspects.

The PSSE and the other documents associated with it provide more than an adequate basis for the suitability decision.

B. If the Secretary determines that the scientific analysis indicates that the Yucca Mountain site is likely to meet the applicable radiation protection standards established by the Environmental Protection Agency and Nuclear Regulatory Commission, do you believe that the Secretary should proceed to recommend the site to the President at this time? If not, please explain.

In our view, several previous Secretaries of Energy should have been in a position to recommend the site several years ago. There have been inexplicable delays in issuing the radiation standards, which were first attempted to be promulgated by EPA in 1985, but was met by challenge, litigation and other delays. Congress directed in the Energy Policy Act of 1992 that the National Academy of Sciences provide the technical bases for the standards, which was done in 1995. While we will not catalog here all the other delays, suffice it to say, the site recommendation should have been made well before 1998 if the DOE was to have begun accepting spent fuel by January of that year as mandated by the NWPA. However, the Secretary should be at the stage where the site recommendation can be made this year.

C. Are there any reasons that you believe should prevent the President from concluding that the Yucca Mountain site is qualified for the preparation and submission of a construction license application to the Nuclear Regulatory Commission?

No. If the decision is to be made on the basis of sound science, there is no reason to conclude that the Yucca Mountain site is not qualified for the next stage of preparation of the NRC license.

D. If you believe that the Secretary should not proceed with a recommendation to develop a repository at Yucca Mountain, what mechanism should be utilized to meet the Department's legal obligation to begin accepting spent nuclear fuel and high level radioactive waste?

Other than repeal of the Nuclear Waste Policy Act, there is no mechanism that can relieve DOE of the obligation to accept spent fuel.

E. If you believe that the Secretary should not proceed with a recommendation to develop a repository at Yucca Mountain, what measures should the Nation consider for assuring safe disposal of spent nuclear fuel and high level radioactive waste?

The Secretary should proceed because the site is suitable and there is no other measure to consider for assuring *disposal,* which is what the Nuclear Waste Policy Act selected as the most suitable means of isolating high-level radioactive waste from the biosphere for thousands of years.

There is international consensus as well as reaffirmation in this country by the National Academy of Sciences, as recently as the 2001 NAS report on Disposition of High-Level Waste and Spent Nuclear Fuel, that geologic isolation is the best long-term means of protecting the public health and the environment.

F. Please provide any other comments concerning any relevant aspect of the Yucca Mountain site for use as a repository, or that are otherwise relevant to the consideration of a possible recommendation by the Secretary.

We have included several points in our previous comments. We summarize them here.

1) The spent nuclear fuel cannot remain where it is indefinitely. It must be moved to a permanent repository without further delay.

2) Many people are fearful of nuclear waste transportation even though the safety record of past shipments is excellent and all future shipments will be regulated. DOE should be more pro-active in transportation planning with other federal, State, tribal and local governments and do more to educate the public on risk.

3) Reprocessing of spent fuel may become technically and financially feasible with more research and development. Such reprocessing would not be precluded by the current flexible options for the repository that retain the capability to remove any or all waste packages for many years before future decision-makers decide to seal the repository. Our understanding of transmutation is that it reduces the volume of waste that must be isolated and it still requires a repository for perhaps a shorter period, but still centuries of isolation.

4) It should not be overlooked that there must be reform to the way the Nuclear Waste Fund is being managed. The Administration and Congress must decide whether fees collected from ratepayers supposedly to finance the civilian radioactive waste management fund are available to finance the repository or are part of the federal budget surplus. Repository opening by 2010 is not feasible if the Nuclear Waste Fund cannot be fully accessed.

CONCLUSION

The evidence available through the *Yucca Mountain Science and Engineering Report* (S&ER), DOE/RW-0539, the *Yucca Mountain Preliminary Site Suitability Evaluation* (PSSE), DOE/RW-0540 and the supporting documents provides the legal and technical basis to support a recommendation by the Secretary of Energy to the President that Yucca Mountain is suitable for development as a geologic repository for safe, permanent disposal of the Nation's high-level radioactive waste as called for in the Nuclear Waste Policy Act of 1982 and Amendments. It is time to conclude the site suitability recommendation process so that the matter of licensing a repository can be placed before the Nuclear Regulatory Commission.

Respectfully Submitted,

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